

Remarks

Claims 1, 10, 11, and 29-36 are sought to be cancelled without prejudice or disclaimer. Applicants reserve the right to prosecute similar or broader claims in a continuation application. Claims 37-55 are sought to be added. Upon entry of the foregoing amendment, claims 37-55 are pending in the application, with claims 37, 54, and 55 being the independent claims. No new matter has been entered based on these amendments.

Based on the above amendments and following remarks, Applicants respectfully request that the Examiner reconsider all outstanding rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 112, second paragraph

The Examiner has rejected claim 36 under 35 U.S.C. §112, second paragraph, as being indefinite. Although Applicants disagree with this rejection, Applicants have canceled the claim for other reasons and in order to expedite prosecution. Thus, Applicants believe this rejection has been rendered moot.

Rejections under 35 U.S.C. § 103(a)

Claims 1, 10, 29, 31-33, 35, and 36 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,549,694 to Makino et al. (“Makino”) in view of U.S. Patent No. 6,249,370 to Takeuchi et. al. (“Takeuchi”), and in further view of U.S. Patent No. 6,856,449 to Winkler et al. (“Winkler”). Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Makino in view of Takeuchi, and in further view of Winkler, and in further view of U.S. Patent No. 6,639,722 to Amm et al. (“Amm”). Claim 30 was rejected under 35 U.S.C. §103(a) as being unpatentable over Makino in view of Takeuchi, and in further view of Winkler, and in further view of U.S. Patent No. 5,493,623 to Frische et al. (“Frische”). Claim 34 was rejected under 35

U.S.C. §103(a) as being unpatentable over Makino in view of Takeuchi, and in further view of Winkler, and in further view of U.S. Patent No. 6,002,154 to Fujita et al. ("Fujita"). Applicant respectively traverses these rejections.

Although Applicants disagree with these rejections, Applicants have cancelled claims 1, 10, 11, and 29-36 for other reasons and in order to expedite prosecution. Accordingly, Applicants believe these rejections have been rendered moot.

New Claims 37-55

New claims 37, 54, and 55 include features which distinguish over the applied references. For example, claims 37, 54, and 55 recite at least a plurality of individual actuators formed on the surface of a continuous solid and substantially rigid substrate and separated laterally from one another thereby forming a two dimensional array, each of the individual actuators having a mirror and a pair of electrodes formed at opposite ends of the individual actuators, wherein when the electrode pair is energized the individual actuator moves the mirror with respect to the surface of the substrate, such that the incident wavefront is modulated to produce an output wavefront.

Makino teaches an optical switch 10 used in a display device that operates to either extract or not extract near field light through the moving of extraction units 17a into first and second positions. (See, e.g., col. 6, lines 7-26). The movement of extraction units 17a is based on electrostatic attraction generated by potential differences caused by applying a voltage to extraction units 17a and transparent electrodes in total reflection face 11A, i.e., using only two electrodes. (See, e.g., *Id.*). In a first position, extraction units 17a are configured to extract near field light and in a second position, extraction units 17a are configured to not extract near field light. (See, e.g., *Id.*). In the first position incoming light is reflected off extraction units 17a, while in the second position incoming light is transmitted through extraction units 17a. (See, e.g., cols. 3 to 4 and col. 8).

Takeuchi is directed to a display device that displays a picture image, which is being used to replace a cathode ray tube or liquid crystal display for color displays. The

display device of Takeuchi includes a waveguide and an array of LEDs/shutter sections, which are actuated into and out of the light path in the waveguide. The actuation is done to either reflect or block light traveling along the light path in the waveguide, which controls either outputting or preventing output of the light. The actuation in Takeuchi is performed through having a flexible substrate (e.g., a vibrating substrate) attached to one end of the LEDs or shutters, which allows them to flex (e.g., cantilever, rotate, etc.) into or out of the light path. (See, e.g., Remarks in Reply under 37 C.F.R. 1.116 filed April 11, 2005 and Remarks in Amendment and Reply under 37 C.F.R. 1.111 filed November 17, 2004). The flexible substrate is required in every embodiment of Takeuchi for it to function. (Id.)

Winkler teaches an electronic control circuit that can be used to control spatial light modulators, but does not teach of the structure or operation of the individual spatial light modulators.

Makino, Takeuchi and Winkler are not Properly Combinable

Applicants assert Makino, Takeuchi, and Winkler are not properly combinable because adding features of Takeuchi to Makino (a) changes the principle of operation of Makino (see, e.g., M.P.E.P. §2143.01(VI)) and/or (b) would render the Makino invention unsatisfactory or inoperable for its intended purpose (see, e.g., M.P.E.P. §2143.01(V)). Makino and Takeuchi function in dissimilar ways. For example, Makino teaches an alleged actuating system that reflects an incident light beam from switch 10 to display the light or that transmits the incident light beam through switch 10 to not display the light. Dissimilarly, the alleged actuating system of Takeuchi moves a reflector and a portion of a substrate into a light path in a waveguide to display light, and leaves a reflector and the portion of the substrate in a default position, in which it does not interact with the light path, to not display light. Thus, in a default position Takeuchi's system does not interact with a light beam at all, while in either position Makino's system interacts with the light beam. Also, Takeuchi's system would not allow for transmission of light through the actuator and requires movement of the substrate with

the reflector to operate. Thus, Applicants assert there is no motivation to combine Takeuchi's system into Makino's system because the combined system would render the Makino invention unsatisfactory or inoperable for its intended purpose. (See M.P.E.P. §2143.01(V)). Also, because Makino and Takeuchi function is dissimilar ways, Applicants assert there is no motivation to combine Takeuchi's system into Makino's system because the proposed modification changes the principle of operation of Makino. (See M.P.E.P. §2143.01(VI)).

New Claims 37-55 Distinguish over the Combination of Applied References

Even assuming Makino, Takeuchi, and Winkler are properly combinable, new claims 37, 54, and 55 recite features that distinguish over the alleged obvious combination.

The optical switches 10 in Makino have no individual actuators, as recited in claims 37, 54, and 55, only first and second electrodes (one electrode associated with element 11A is not shown and the other electrode is each extraction unit 17a). This is because Makino requires electrostatic actuation between electrodes in total reflection face 11A and extraction units 17a to operate. Also, there are no mirrors moved by individual actuators through energizing of the electrodes to reflect incident light in Makino, as recited in claims 37, 54, and 55, because reflection from an alleged actuator in Makino is from extraction units 17a and total reflection face 11A, not mirrors, where extraction units 17a are also one of the electrodes in the electrostatic scheme. Neither Takeuchi or Winkler cure these deficiencies in Makino.

Takeuchi does not receive an incident light beam at all, as recited by claims 37, 54, and 55, but instead uses a waveguide that transmits light until a reflecting element is moved into a light path in the waveguide. Also, Takeuchi does not teach or suggest its alleged actuator includes at least a plurality of individual actuators formed on the surface of a continuous solid and substantially rigid substrate and separated laterally from one another thereby forming a two dimensional array, each of the individual actuators having a mirror and a pair of electrodes formed at opposite ends of the individual actuators,

wherein when the electrode pair is energized the individual actuator moves the mirror with respect to the surface of the substrate, as recited in claims 37, 54 and 55. As discussed above, Takeuchi does not teach or suggest these features of claims 37, 54, and 55 at least because (a) the substrate in Takeuchi is not continuous and substantially rigid and (b) the substrate in Takeuchi moves with the mirror during actuation of the mirror, i.e., the mirror does not move with respect to the surface of the substrate. Neither Makino or Winkler cure these deficiencies in Takeuchi.

Thus, even assuming the combination of Makino, Takeuchi, and Winkler is proper, the combined references do not teach or suggest at least a plurality of individual actuators formed on a continuous solid and substantially rigid surface of the substrate and separated laterally from one another thereby forming a two dimensional array, each of the individual actuators having a mirror and a pair of electrodes formed at opposite ends of the individual actuators, wherein when the electrode pair is energized the individual actuator moves the mirror with respect to the surface of the substrate, such that the incident wavefront is modulated to produce an output wavefront, as recited in claims 37, 54, and 55.

None of the other cited references teach or suggest at least a plurality of individual actuators formed on the surface of a continuous solid and substantially rigid substrate and separated laterally from one another thereby forming a two dimensional array, each of the individual actuators having a mirror and a pair of electrodes formed at opposite ends of the individual actuators, wherein when the electrode pair is energized the individual actuator moves the mirror with respect to the surface of the substrate, such that the incident wavefront is modulated to produce an output wavefront, as recited in claims 37, 54, and 55. Therefore, none of the other applied references cure the deficiencies of Makino, Takeuchi, and Winkler.

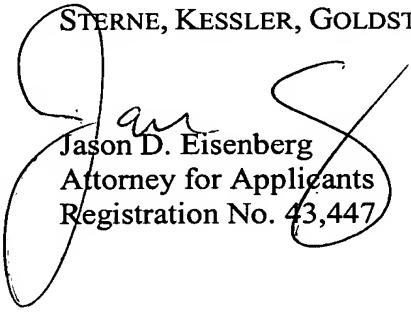
Accordingly, Applicants respectfully request that the Examiner find new claims 37, 54, and 55 allowable over the cited references. Also, at least based on their dependency to claim 37, Applicants request that the Examiner find new claims 38-53 allowable.

Conclusion

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided. Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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Date: 3/28/06

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